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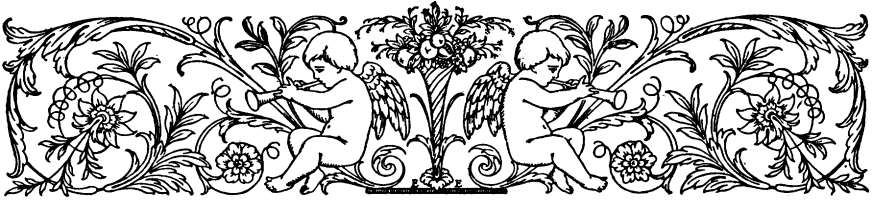
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ON BEHALF OF MUSICOLOGY

By WALDO S. PRATT

PERHAPS the first question is, Do we really need the word "musicology?" It is a word not instantly grateful to the ear or to the mind. The eye may confuse it with the botanist's "muscology," and the humorous fancy may even connect it with the ubiquitous *musca* of entomology. Even when we see what it is and that it is etymologically correct, we have to confess that it seems almost as hybrid as "sexology." At all events, it is more ingenious than euphonious, more curious than alluring.

One trouble is that it is extremely recent. It is so new and rare that it is not yet listed in any general English dictionary or in any catalogue of English musical terms. I doubt whether it even occurs in Grove's big "Dictionary of Music and Musicians." Yet it has been creeping in as a twentieth-century innovation. We may guess that it was suggested by the French *musicologie*, or perhaps coined to match the German *Musikwissenschaft*. Like them, it plainly means "the science of music"—a phrase, however, which has often been loosely used, in America at least, for the theory of composition, and which, therefore, does not at all express the proper sense of "musicology," if the latter corresponds to its French and German analogues. Assuming that there is a more general "science of music," for which a single technical term is required, "musicology" offers points of practical convenience. It resembles many other words ending in "-ology" or "-logy." It yields several handy derivatives, such as "musicologist" (or "musicologue"), "musicological," and the like. And, being new, it is free from entangling associations.

We may conclude, then, that the word will take its place in usage if its proper meaning justifies it. We need it if it represents

a significant and valuable conception. The purpose of the present essay is to take up some questions about the nature and bearings of the conception that seems to stand behind the word.

Before entering on the discussion we should note that at intervals during the last half-century there have been efforts to make encyclopaedic classifications of musical knowledge, mostly under the head of *Musikwissenschaft*. Under this word in Riemann's "Musik-Lexikon" (since 1905 at least) will be found references to essays as far back as 1863, and Riemann himself has issued a significant small manual entitled "Grundriss der Musikwissenschaft" (1908). There is a considerable amount of fragmentary material scattered about in numerous periodicals and books. Every writer who attempts to frame general surveys of musical facts, efforts or ideals is forced to give some space to fundamental classifications of this sort.

Special interest attaches to the schemes of Adler and Riemann. Adler makes an excellent distinction between the "historical" and the "systematic" methods of treatment. Under historical lines of study he enumerates those concerning (a) Notation and all methods of record, (b) Art-forms and the resulting classes of musical work, (c) Composition or the inner texture of works, and (d) Instruments. Under this head he names as collateral sciences Palaeography, Chronology, Diplomatics, Literary and Liturgical History, Biography—all these being special methods of research which may be applied to many other subjects besides music. Under systematic lines of study he ranks those concerning (a) Speculative Theory (i. e., pertaining to harmony, rhythm, meter), (b) Aesthetics, (c) Pedagogics, (d) Musicology (i. e., ethnological or comparative investigation). Collateral sciences here are Acoustics, Physiology, Psychology, Logic, Grammar, Pedagogy, Aesthetics. This classification is largely dictated by a knowledge of the kinds of publication that German scholarship has evolved. It bears marks of being made by a mind trained bibliographically and familiar with the traditional German encyclopaedic categories. It is more practically serviceable than theoretically satisfying. Its "systematic" division is less useful than the "historical." The application of "musicology" to comparative, ethnological research is surprising, and must be set aside as arbitrary.

Riemann's latest classification is much simpler, having but five main divisions: (a) Acoustics, (b) Tone-Physiology and Tone-Psychology, (c) Musical Aesthetics, (d) The Theory of Composition, (e) Music-History. This leaves out too much, and confuses

logical categories. Surely Music-History should not be ranked as in any way co-ordinate with disciplines like Acoustics or Physiology, for reasons that will appear more fully as we proceed.

Consideration of such schemes of classification as these brings sharply into view one of the initial difficulties of the general subject before us. What is to be included under the term "music"? Every practical worker is apt to draw some arbitrary circle for himself and to assume that only what lies within it is worthy of regard. Even thoughtful scholars are in danger of being unduly influenced by what we may call the incidents of publication, allowing the range of their thought to be fixed by the literary data before them. All may slip into some rut of popular or traditional thinking without realizing it. No great harm is done by such narrowness in many instances. But it is certainly obstructive to success in those inclusive, encyclopaedic surveys which evidently are suggested by "musicology." Here genuine scholarship must guard itself against every species of provincialism, from the pettiness of the ignorant to the snobbery of professed culture. Its outlook must be determined, as far as may be, not by the impulses of personal preference or prejudice, not by the demands of practical instruction, not even by the problems of library economy and system, but by the essential possibilities of the subject. "Musicology," if it is to rank with other comprehensive sciences, must include every conceivable scientific discussion of musical topics.

The truth is that in these latter days the territory of thought and action comprised under the word "music" has become almost disconcertingly large. The art proves to belong to all the centuries and to blossom in the soil of every civilization. Like what is called "literature," it takes on forms and idioms suited to every class, not excepting the most immature and even the very illiterate. Being an art that requires personal interpreters beyond all other arts, it calls into action a gigantic army of professional exponents, whose equipment and discipline constitute a striking branch of what we usually call "education." Its larger undertakings involve extraordinary outlays in the way of apparatus and personel, and these, together with the still more extraordinary endeavors of publication to provide its technical literature, give it a huge share in the domain of "business." Inasmuch as a major part of its expression is sought with the help of implements that we call "instruments," it summons to its aid a host of mechanical principles and devices—far more in number and importance than is commonly known, even by those otherwise well-informed. Dealing with lines of expression and aesthetic effect that are more

varied, intense and penetrating than those of any other fine art, and yet standing apart from all other fine arts in some of its most characteristic operations, it presents a fascinating array of psychical problems, pertaining not only to individual experience, but to collective social experience. These problems multiply before the inquirer the more because the art of music is not content to pursue its own peculiar paths alone, but shows a notable aptitude for composite undertakings in conjunction with various lines of effort that are essentially non-musical. And music still evinces the capacity for development, so that it is certain that it is not yet by any means a completed art.

In the light of considerations like these it is clear that "music" as a department of human interest and action is no small subject. If there is or should be a special science devoted to it, that science must be conceived with reference to what "music" already is and what it may become. "The world of music"—to use a convenient phrase—is extremely complex. It includes both subjective experiences and objective things, facts, principles, laws, processes, products, utensils, creators, organizations, institutions, powers, ideals. Any or all of these may be taken as topics of scientific scrutiny, and such scrutiny ought to yield something toward the building up of a comprehensive "science of music." Here, then, we may expect to find the field of "musicology." Whether that field is worth having a specific name depends mainly upon two things—whether it is skilfully cultivated, and whether its essential connections with cognate fields are judiciously made manifest.

The starting-point in a constructive discussion of "musicology," as most writers realize, is the distinction between the art of anything, and the science of it. The two are not the same, even when they deal with the same materials. In the field of music, the artistic is the side of practical action, largely controlled by intuition, feeling, imagination; while the scientific is the side of logical or rational examination, descriptive, analytic, definitive, philosophical. The goal of the former is the actual creation of music or the production of musical effects. The goal of the latter is the investigation of this artistic process in all its factors, elements, aspects and meanings. Hence in music, as always in such cases, the science of the art is subsequent to the development of the art itself, and is usually advanced chiefly by others than those to whom the art itself owes most. This fact often occasions a certain apparent chasm between the two classes of workers, due to the radical difference between the processes used by them respectively, even when it is evident that they are really working in the same

general field. On the whole, I think that the want of sympathy is usually greater on the side of the artistic worker. Yet we may be sure that every powerful artist works with a large amount of implicit science at his command, and that all well-reasoned science tends to supply a broader and sounder basis for artistic procedure. Surely, if artists are moved to exercise their powers with a full sense of the social and moral relations of their art, they cannot avoid just those habits of historical, critical and philosophical reflection upon it which are distinctly scientific in nature.

The word "science" embraces both the act of finding what there is to know, with whatever further processes of thought may be needed to co-ordinate and interpret what is discovered, and also the total result—the body of knowledge secured. It is applied both to a process and to its result. If our thought rests mainly upon the process, we say that science involves discovery, investigation, sifting, verification, codification, classification, definition, explanation, elucidation and the like. If we think mainly of the result—as we do when we speak comprehensively of some particular science—we must divide the total body of ascertained truth in accordance with the nature of the subject treated. Hence an encyclopaedic view of any special science necessitates an attempt to state what are the essential components of the field of fact, thought and effort which that science covers. "Musicology" can be properly defined only by describing in outline what is the field of "music" which is its subject.

My aim in the present essay is not to advocate a particular scheme of scientific thought about music, but only to discuss the usefulness of the kind of thinking that leads to the formation of such schemes. For purposes of illustration, however, it may be well to add to the outlines already mentioned still another that is made in a somewhat different way. In the main this is like that which I suggested in 1888 at a meeting of the Music Teachers' National Association in Chicago.

Inasmuch as all musical art is conditioned upon the phenomena of sound, especially those relating to tones and their various dynamic and metric arrangements, the first division in our scheme may well be *Musical Physics* (or *Acoustics*, if this term can be made sufficiently broad), including everything about the nature, transmission and interrelations of tones, so far as these data are employed for musical purposes. Due place must be made here for many facts under the heads of Metrics and Rhythmics, and perhaps for some aspects of Mechanics that have a bearing upon practical music-production.

Upon these physical phenomena as a basis—or using them as building-materials—the human mind proceeds in experiencing those notions, judgments, impulses, and purposes which are distinctively musical. Hence our second division is *Musical Psychics*, including all that is known or can be discovered about the origin, character and operation of these psychological phenomena. Until rather recently this has been a hazy and chaotic branch of musical science, occasionally running off into strange disquisitions that seem almost as mediaeval as astrology or alchemy. But trained observers are now rapidly rescuing the subject from its insignificance.

When musical ideas are expressed through the medium of tone, the objective procedure presents many special constructive or architectonic features, which are more or less analogous to the structural characteristics of speech. Music, we say, has its morphology, syntax and rhetoric, like a language, and its art-forms resemble those of literature. Hence our third division is *Musical Poetics* (using this term in its ancient Greek sense), including whatever pertains to the essential method or form of expression, regarded as a process of invention or manufacture. This, of course, must be one of the largest and most conspicuous of all our divisions, since it takes in most of what is usually called “the theory of composition,” with many of the results of biographical research and the analytical criticism of works and styles. Because it is so extensive, it is open to much subdivision.

Since all artistic expression has for one of its prime purposes the appeal to a percipient (in music, to a hearer), involving both effects upon the senses and reactions through the senses upon the mind, our fourth division is *Musical Aesthetics*, including both aural physiology, so far as concerned in the perception of musical effects, and aesthetics proper. It needs to be said that the word “aesthetics” has sometimes been used very loosely in musical discussion, so as to include some topics that are better classified elsewhere.

Musical expression never has precision or permanence unless in some way it is recorded for preservation and dissemination. Hence our fifth division is *Musical Graphics* (or *Semeiotics*, if a somewhat more general term is desired), including everything pertaining to notation, whether manual or mechanical. This division is important because the recording of music differs much from all other forms of graphic symbolism. Here belong large bodies of facts pertaining to music-publishing.

Musical expression, furthermore, never occurs without employing certain implements or tools by which it is said to be

“performed.” Hence our sixth division is *Musical Technics*, including two great subdivisions, (a) Instruments, which comprise both the human voice and an indefinite number of mechanical forms, and (b) Technique, the usual name for the methods in which instruments, whether vocal or mechanical, are artistically used. Here belong such topics as vocal physiology, instrument-making, and various kinds of technical gymnastics.

It remains to observe that music is very extensively used in combinations and applications that involve elements that are wholly non-musical. It is “applied” to various purposes that are not distinctively its own. It thus acquires a composite character that is often hard to analyze, and may even take on tendencies which are not connected with its own nature. Hence our seventh and last division in the present classification is *Musical Practics*, including, for example, its unions with the literary arts, especially poetry and the drama, with dancing and all bodily evolutions, with the dignified branch of religion known as liturgics, with hygiene and therapeutics, with the extensive institution of general education, with social undertakings on behalf of amusement, culture and the like, etc. No one knows how many subdivisions ought to be enumerated here, since it is one of the glories of musical art that its practical applications seem infinite.

Broad as is the scope of these seven divisions of musical science, they do not suffice for a comprehensive definition. These differ from each other in the objects taken for consideration, in their data or topics. We cannot forget that another series is secured if we differentiate by the method pursued and the end in view. The same data may be handled in more than one way. And if musical art in general is like other large subjects of scientific treatment, it is likely that the science of it must be defined methodologically as well as topically. Our first series of divisions or branches was determined by looking at what is most characteristic of music. The second series is determined by the essential nature of all scientific investigation, whether applied to music or something else. To make this distinction clear requires a brief statement of scientific procedure in general.

Sciences properly begin with facts, which are said to be “ascertained” when they are critically observed, verified and exactly recorded. As the body of ascertained facts upon any topic accumulates, they become objects of logical examination so as to reduce them to groups or classes about which collective statements can be made, and, if possible, to arrive by induction at the general truths which they embody or illustrate. Upon the

basis of such synoptic treatment the attempt is usually made to frame special presentations of selected data so as to serve this or that particular purpose of information, instigation or education. Scientific results of all kinds are made known for preservation and reference by publication. As publication proceeds and becomes elaborate there is a gradual advance from the stage of detached and tentative personal opinions toward that of relatively settled and unified collective opinion. It is to this developed stage of thought regarding any field that the name of "the science" of that field is ordinarily applied. Since this mature science—like a mature art—represents a social habit of thought, it has many of the qualities of what we call an "institution." Although built up by the efforts of individuals, it finally acquires a standing that seems independent of its creators. It then seems to maintain itself and to grow with a vitality of its own.

Now, as the growth of any science advances, a separation tends to take place between different ways of treating the materials at hand. In most fields of study the two general scientific processes or methods of treatment which are of the highest importance are (as Adler recognizes in his scheme above noted) the historical and the systematic. The aim of the historical method is to arrange facts in their various chronological relations, with special reference to the course of progressive development and to the personal and other factors concerned in that development. With many subjects, where evolution has been long continued, this method takes precedence of all others. But in other subjects, where the emphasis falls on the present status or condition of things, prominence belongs to the systematic or analytic method, the aim of which is nicety, penetration and completeness of logical definition and classification. History as a science views facts horizontally, in their sequence in time, while System views them vertically, in their static logical relations. The facts regarded may be substantially the same in the two cases, but the methods employed and the aims in view are different, so that the results are diverse.

Still other methods are conceivable. Thus in many fields the critical or judicial method is called for. The aim of this is to arrange facts with reference to certain standards of relative excellence or success. Here science merges with what is often called philosophy, since the facts are not only compared with each other, but also measured somewhat by ideals. Again, in many fields importance attaches to some constructive or pedagogical method, the aim of which is progress or culture, either by raising the

standards of thought in general or by bringing such standards to realization in an increasing number of minds. Here, also, science becomes decidedly idealistic.

In a field like that of music all these four methods are possible and desirable. Each may be pursued more or less alone, or they may be combined in various proportions. The field is so large that we may speak of its scientific treatment as dividing into *Musical History*, *Musical Encyclopaedia* (to use the technical term for scientific taxonomy), *Musical Criticism*, and *Musical Pedagogy*. This series of four needs to be distinguished from the previous series of seven, simply because arrived at by a different path. Only as both series are in mind do we approach a fair sense of Musical Science in its totality. Or, to put it in another way, Musical Science must allow for the pursuit of any one of its seven topical branches by any one of the four leading methods of consideration. If this distinction is sound, it will be seen why objection arises to both Adler's and Riemann's schemes as given above. In both of them there seems to be a confusion of categories.

Before leaving this question of the scope and plan of Musical Science it is only fair to say that there is one branch of "music" as a large social fact which is hard to classify in any scheme, and yet for which some suitable place must be found. This is the branch which includes those associations, organizations or collective business enterprises whose object is to produce or disseminate musical knowledge or implements on a large scale. The difficulty about these is to determine what is their essential nature. At one moment they appear to be so much a part of the total enterprise of "music" in the world that they should be ranked as an eighth member of our first series—perhaps with some technical name like Musical Synergistics! At another moment they seem to be merely economic or co-operative expansions of practical efforts with a pedagogical or constructive intention. The enterprises of the modern business world known as choral societies, permanent orchestras, opera-companies, associations of teachers, publishing-houses, periodicals, and the like, are surely too important not to receive full consideration and classification.

Whatever may be thought about this debatable point, or even about other points in the foregoing scheme—which it will, be remembered, is here introduced only by way of illustration—it is obvious that any "science of music" must in some way include such branches of knowledge as have been indicated. Such a field of research and doctrine must be what a term like "musicology" is designed to cover. If "musicology" were a recognized and

settled science, there would be no need of the details which are here suggested. At present, however, we are confronted by the peculiar situation that the majority of those who, as musicians, are most concerned with the facts, theories and implications of "musicology" hardly realize that it exists. And the general world of scientific specialism is still less aware of this newcomer into the domain of "the ologies." Of course, there is no real difficulty in showing that "musicology" is already far advanced in range, dignity and power. It is enough to point to the thirty volumes containing the papers of the International Musical Society since 1899, or the extraordinary "Denkmäler" published in more than one country, or the monumental histories and biographies of high rank. Musical scholarship is fully equal in ability to scholarship in any other field whatsoever. But its total impression upon the general world of thought is slight, partly because its well-equipped workers are relatively few, partly because scientists in other fields are too busy with their own affairs to keep up with what has been going on here for several decades, partly because many who are proud to be called musicians have the habit of waxing scornful over people who merely study and write "about music."

The chasm between the artistic and the scientific worker is most noticeable in the field of the fine arts. It has been somewhat obliterated in arts not usually called "fine." The arts of medicine and surgery, of war by land or sea, of government and social progress—all these and many more are not divorced from their companion sciences. But the only fine art whose artists and scientists have much visible sympathy is the art of literature. Probably this situation is due to the comparative intangibility of the factors with which creative art does its best work. Something is also due to the intense subjectivity of the artistic life. These explanations, however, do not entirely explain, much less justify, the fact. When once an artist in any field has exercised his mind scientifically, or a scientist has sought for artistic accomplishment, he is bound to see that the two sorts of mental operation are not only equally normal and delightful, but that both are essential to well-rounded mentality. They are complementary, not antagonistic.

I set this down in general terms, applying it to all arts rather than simply to music, because when it is affirmed of music it is often called special pleading. The point is strong as regards music, not because an indefinite number of apt illustrations can be cited in the musical realm, but because it is always and everywhere strong. Knowing and doing, reasoning and accomplishing, science

and art—these belong together in healthy, normal life. They cannot be dissociated. One can, however, focus his attention so much upon one side as to push it into undue prominence and thus partially to cripple power. Artistic workers, especially musicians, have good cause for complaint that the so-called scientific world does not show proper respect or sympathy for what they are doing. But they need to remember that they, on their part, have not always kept themselves sensitive on the scientific side, and that by their disdain they have often alienated those who would apply scientific methods to artistic subjects. An essay like this cannot do much to alter the faulty mental habits of individuals. But it is possible to instance some specific ways in which scientific research interlocks with artistic effort. Without attempting anything comprehensive, let us now indicate certain points of utility of musicological studies for music and musicians.

Of the branches of "musicology" that we have named the one whose utility would be conceded most freely is Musical History, including not only details about composers and famous works, but accounts of the development of forms and styles of composition, of instruments, of methods of performance, of notation, and of the social applications of music. The popular use of historical text-books and their introduction into schools have made many minds familiar with this type of scientific inquiry, at least in its summary form. The benefit of all kinds of history, as reported in such reference-books, lies both in the substantial information supplied and in the stimulus of "the historical imagination," without which no amount of information is worth much. History ought to place things before the student as the results of some sort of vital growth, as expressions of living forces, both those of individual personality and those of periods and races, as evidences of the expanding spirit of humanity. Much of this benefit is possible for those who merely aim to absorb books in which history is furnished in partially predigested shape. But the best good comes from doing some investigating for one's self. It is true that only those with exceptional training, peculiar access to materials, and leisure for long and hard labor can hope to discover and publish that which is new to the scientific world. But a humbler type of "original research" is possible for all, that which discovers to the student what he knew only from "authorities." Every such effort toughens the muscles of the reasoning faculties, and helps to set us free from the bondage to mere tradition and the idolatry of mere authority which debilitate the mind like insidious poisons.

In the field of Criticism musicians are sometimes more voluble than impressive. The artistic temperament is apt to be intense in its likes and dislikes, and is often lavish in the utterance of its prejudices. No sensible person would doubt the potential value of the critical judgments of artistic workers, but we may demand that they be based upon scientific foundations, that is, be accurate and clear in their references, embody real knowledge both of historical relations and of essential details of analysis, and show the working of sane and consistent principles of estimation. Sound criticism is not the froth of sentiment or the vapor of whimsicality, and emptiness of inner content cannot be hidden under a voluminous costume of rhetoric. Critical valuations are properly the fruit of exact analysis and comparison, often of the driest and dreariest sort, and they involve not only extensive knowledge, but much intellectual acumen. In spite of the difficulty of making them well, it is to be wished that more musicians would undertake them in earnest. The exercise would be of immediate benefit to them in judging their own productive work, and in opening the door for others into the domain of genuine music-appreciation. And such exercises tend to disclose the importance and the fascinating possibilities of one great branch of musical science. Criticism is properly the division of "musicology" which binds together history and theory on the one side with constructive and pedagogical effort on the other. But it can fulfill its mission only when in thoughtful thoroughness it stands abreast of its colleagues.

We may well add here a few words about the use in musical circles of scientific Pedagogy. The extent of the "music-teaching" industry is almost appalling. In every city, town and hamlet "teachers of music" multiply almost as fast as physicians and lawyers. If this were a sure token of abounding musical vitality in modern life, we could only give thanks. But there are signs that in too many cases neither teachers nor taught have high or large notions of what they are about. Much of the process, though naturally claiming to be educational, is not far from being the exercise of a clever trade or even the perpetration of a pathetic swindle. Now, I am not one who believes much in what is often called "pedagogy" in these days, if that means an abstract, generalized science of teaching. Accordingly, I am not solicitous that every music-teacher shall be "pedagogically trained" before he may teach, though science may help art here as everywhere else. But I would most earnestly plead for the importance for every teacher of being so grounded in *what* he is to teach that

pedagogical skill and wisdom shall spring up almost unconsciously. For what is pedagogical method as applied to any subject? Is it not essentially an idealistic grasp of the subject itself? Does it not stand where we have placed it in our analysis a few paragraphs back, as the fourth member in the series of which history, system and criticism are the first three? History mostly looks backward over the past. System and criticism regard both past and present. Pedagogy faces toward the future, not so much the long vista of time, but the immediate future of the pupil. The pedagogical treatment of music, to be truly effective, involves a fairly profound sense of what music may be and ought to be for the pupil, which means, of course, that back of the act of teaching shall be a large experience on the teacher's part of what music is. Hence we may speak of pedagogical method as "ideal and constructive." Surely, while this is the highest and most difficult of the great branches of scientific effort, it is also the most useful and the most rewarding.

In these last remarks about history, criticism and pedagogy I would not imply that musicians are wholly devoid of scientificness. My impression is rather that the best of them are far more scientific than they know. My one contention is that they might greatly augment both their delight in their art and their power in its exercise if they would frankly discover that they are "musicologists" and that their artistic work is helping to the better establishment of "musicology." Let us now enlarge the argument by referring briefly to one or two of the aspects of music which have marked scientific possibilities.

It is hardly necessary to argue for the utility of that branch of science which deals with the construction of music—what we have called Musical Poetics. The pupils of our numerous music-schools are mostly bent upon "making music," either primarily by composition or secondarily by performance. To be a music-maker is to most minds what it means to be a musician. It is being seen more and more clearly that the adequate exercise of this artistic function necessitates discipline and training, a large part of which must be more scientific than artistic. The would-be composer must in some way master the theory or science of harmony, of form, of instrumentation, of style, not that he may presently apply parrotwise a system of manufacturing rules, but that he take advantage of all that has been discovered as to the principles of fashioning or building musical structures. He must know a large number of masterpieces, representing more than one type or tendency, expressing manifold varieties of mood and personality, and using this or that means of embodiment. These forms of knowledge

or science, to be productive, must be exact and thorough, analytic and systematic. Only on the basis of such discipline can artistic creation in these days set forth with assurance or dignity. Every great composer of the last half-century has been a musical scientist of distinction. Similar remarks may be made about performers, if they are to be genuine interpreters. Interpretation implies the power to think music as the composer thought it, to tread in his footprints the path of creative inspiration. Performers, too, rise into real eminence only through such discipline as makes them potential composers, in close sympathy and fellowship with those whose works they reproduce. They, too, need to know the whole scientific framework of the art, not simply in the form of vague intuitions and "feelings," but by the stern discipline of study. To-day, more than ever before, all superior singers, players and conductors are musical scientists. One of the main reasons why so many "practical musicians" amount to so little as composers and performers is because this need of grounding in the science of the art is not properly realized.

What has just been said has a certain hackneyed quality. It is substantially what is always being said, without being much heeded. But another line of thought follows naturally which is not so common. Musical Poetics offers something more than good discipline for composers and performers. There is room in it for considerable original research, even of a sort that launches out into the unknown. The last word has not been spoken in the acute, logical analysis of the ways in which tone-materials have actually been employed and fitted together by composers, especially those of recent date. And, surely, all the possibilities of the subject have not been explored. When one considers how in the last decades the traditional limits and habits of composition have been stretched or transformed by men like Schumann, Wagner and Brahms, by Strauss and Reger, by Debussy and other impressionists, by Tschaikowsky, Grieg and Dvořák, by Elgar and MacDowell—not to speak of hosts of others—he does not need to be told that for two generations or more composers have been making incessant journeys of exploration into unknown or uncharted regions. I am not here speaking of the general freshness of the artistic inspiration of these writers, or of the quality of their "message," but only of the novelty of the structural procedures which they employ. In their search for expression or effect they have proved themselves inventors in construction. Everywhere we see expansions of harmonic and contrapuntal theory. There is a wealth of unprecedented rhythmic and metric patterns. Both

the details and the ensemble of form assume new aspects. Tone-effects that are best described as those of "color" rather than contour are insistently tried in every combination. All this suggests that the science of Musical Poetics is still plastic and incomplete. Much that our fathers considered "settled" is now felt to be only transitional. Much that we ourselves think is axiomatic and inevitable may be only the characteristic idiom of the class or school that happens now to be dominant. Remarks like these are not made out of a spirit of radicalism or iconoclasm. A good deal of the restlessness of the advanced musical world is probably only feverish or morbid. But let us always hold the door wide open for anyone who, either by close reasoning or even by a happy guess, shall show paths in composition that are untried or unknown. Such work may be almost wholly scientific in its first forms, but no one can tell to what artistic results it may lead.

One almost hesitates even to mention the relation of science to art in one or two specialties of musical work where they seem usually not to be entirely amicable. We should expect that many of the facts of Acoustics would be emphasized in teaching the art of composition, and in the practical treatment of instruments, especially of the voice. In the phenomena of vocalization we encounter a blending of elements related on one side to acoustics, on the other to physiology, just as in instrumentation acoustics is combined with mechanics. A real grasp of questions of phonetics and of tone-color everywhere would seem to be possible only when their purely physical factors were exhaustively considered. Yet musical acoustics is not often given a strong place in musical education, and we often find much lack of sympathy between those who approach phonetics, for example, from the sides of the linguistic scientist and the elocutionary or singing-teacher respectively. The various parties in this and kindred areas of debate ought to get together under some reasonable *modus vivendi*. Each of them needs something that the others can supply. They belong in company and in fraternal co-operation.

Similar remarks are in order regarding the relation of acoustics, aural physiology and Musical Aesthetics, except that here scientific research has not been so much divorced from practical discussions. We may wonder, however, whether there are not large tracts of fact and theory that are worth the serious attention of those dealing with the popularization of musical art which as yet have not received careful consideration. What is to have "a musical ear"? What defects in this faculty interfere most

with musical appreciation? What can be done to remove or prevent such defects? These and other questions are scientific in nature, but artistic in practical bearing.

When we turn to the many applications of music as an art to the furtherance of institutions or interests that are not in themselves musical, it is obvious that the harmonization between whatever pertains to the theory of that with which music thus makes connection and whatever pertains to music in its adaptation to such special applications must be worked out by thought-processes that are in large measure scientific. In the last analysis it is probable that most of the difficulties and misunderstandings that occur, for example, in the liturgical or the educational applications of music, are due to some failure to employ the methods of critical definition and classification which every trained scientific worker uses constantly. To develop this point here would require more space than is available. But its general cogency is evident.

One concluding remark may not be out of place. It is likely that no one person, in these days of advanced specialism, can hope to be a full master of details in all branches of what has been called "musicology" in this article, or to be engaged in fruitful original discovery in many lines. But it is not too much to hope that more disciplined scholars in the musical circle will so familiarize themselves with the total range of the subject that they can in their own persons and work commend the science of music to the attention of both the scientific and the artistic worlds. It may even be that sometime there will be in the faculties of certain large institutions a professorship of "musicology," whose function shall be to unfold the broad outlines of the science and to demonstrate not only its intellectual dignity among other sciences, but its practical utility on a large scale to hosts of musicians and music-lovers.